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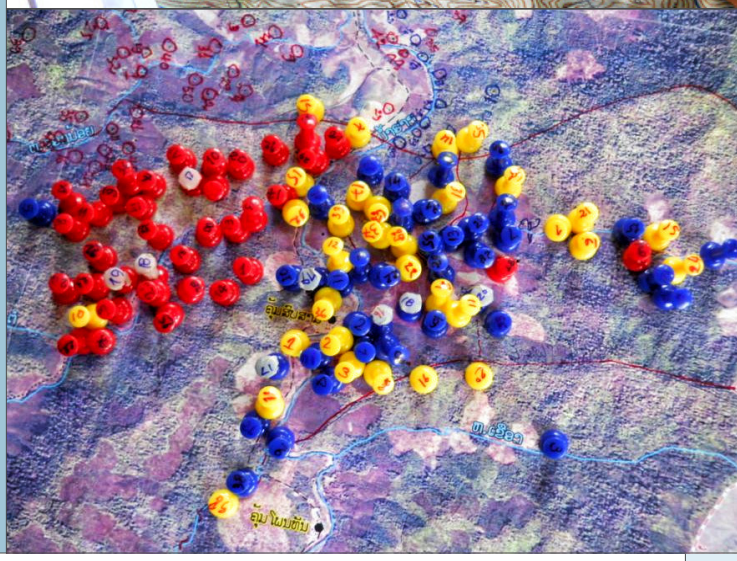
NAFRI Research Brief

New Directions for Participatory Land Use Planning: Can Bottom-up Approaches Achieve a Win-Win for Sustainable Development and Forest Conservation?

KEY MESSAGES

- Land-intensive development pathways such as TLIC and the expansion of commercial agriculture are placing increased demand on rural landscapes and **heightening tensions around resource-tenure security**, requiring innovative approaches to planning.
- National **development and conservation goals are sometimes, but not always, compatible with one another and with the needs and interest of local communities**, requiring mechanisms for negotiation.
- Top-down planning tools provide a general framework for enhancing synergies and negotiating trade-offs between development and conservation goals at the macro-level, but **bottom-up processes are necessary to ensure local needs and enable village-level planning and management**.
- An innovative, bottom-up participatory land use planning approach co-developed and implemented by a consortium of GoL agencies, development practitioners and researchers through the Agro-biodiversity Initiative (TABI) **demonstrates strong potential for supporting national development and conservation goals in a manner that is locally-acceptable and reflects actual land uses and resource needs**.
- Through the *participatory Forest and Land Use Planning and Management* (pFALUPAM) approach, **areas allocated for forests increased by 8.4 percent**, though varied significantly by area depending on local contextual factors. Collaborative planning supported enhanced landscape-scale connectivity between forest areas, promoting ecosystem service values.
- **Agrobiodiversity and the integrity of multifunctional landscapes were enhanced** through zonation for local species and cultivars, protection of agricultural areas, and the promotion of long-fallowing in rotational upland systems through colocation.
- The pFALUPAM approach **facilitated local management** by clarifying inter-village boundaries to reduce conflict, enhancing local tenure security, and providing a mechanism for community consensus-building around management objectives.
- Further work is needed to **support local institutions and capacities for adaptive management and the clarification of *jap jong ti din***[1] and its effects on communally-managed resources.



Introduction

Lao PDR's rural areas have been transformed by rapid economic growth and heightened competition for land and forest resources. In part responding to these changes, but also driving them, the government of Lao PDR has outlined a number of ambitious goals with regard to socioeconomic development, sustainable agricultural growth and environmental conservation. Within such a broad and ambitious programme there are a number of important synergies as well as trade-offs at all levels. The achievement of these goals, the maximization of synergies, and the equitable and socially-acceptable mitigation of potential conflicts and trade-offs requires careful planning and local participation where national priorities "hit the ground" and are worked out in practice at the village-level. This brief explores the experiences of the Agrobiodiversity Initiative (TABI) in developing and implementing a model for bottom-up planning that seeks to enable more effective local participation and decision-making toward these diverse goals.

[1] Household reservations of land within communal areas

National Priorities: *Forest Conservation and Sustainable Development in the Lao Uplands*

The 2030 Vision of the Ministry of Planning and Investment (MPI 2016: 86) states, among other high-level objectives, that national development aspirations will be carried out alongside "environmental protection through the efficient utilization of natural resources to ensure sustainability." Achievement of this objective includes the promotion of green agricultural practices (cf MAF 2016), 70 percent forest cover by 2020, and the gradual reduction of poverty rates and malnutrition (MPI 2016: 127). These national priorities also intersect with several key Sustainable Development Goals (SDGs) of UN Agenda 2030, and the reduction of forest carbon emissions under Reduced Emissions from Deforestation and Forest Degradation (REDD+). In some ways, these goals are mutually reinforcing and complementary, while in other ways they entail important trade-offs. In particular, while dominant approaches to national development that emphasize land-based investments through concession and lease projects (promoted through policy directives such as Turning Land into Capital, or TLIC), commodity-oriented agriculture commercialization, and increasing regional connectivity through infrastructure development and trade corridors have been instrumental in reducing poverty and contributing to GDP growth, they have also played a dominant role in the transformation of rural landscapes, driving forest loss and heightening local tenure insecurity. As of 2018, around 1 million hectares[2] (ha) have been granted as concessions and leases to foreign and domestic investors, 31 percent of which were allocated within areas categorized as forests (Hett et al. 2019). In addition to forest impacts, concession-based investments have also largely fallen within areas that were previously held by local communities, either as individual agricultural parcels or, more often, communal lands and forests. While the social distribution of agricultural land area in Lao PDR has been relatively even compared to that of neighboring countries, land concessions have dramatically increased the inequality of distribution such that 12 percent of land holders[3] in Lao PDR now command more than 40 percent of all agricultural land (Ingalls et al. 2018).

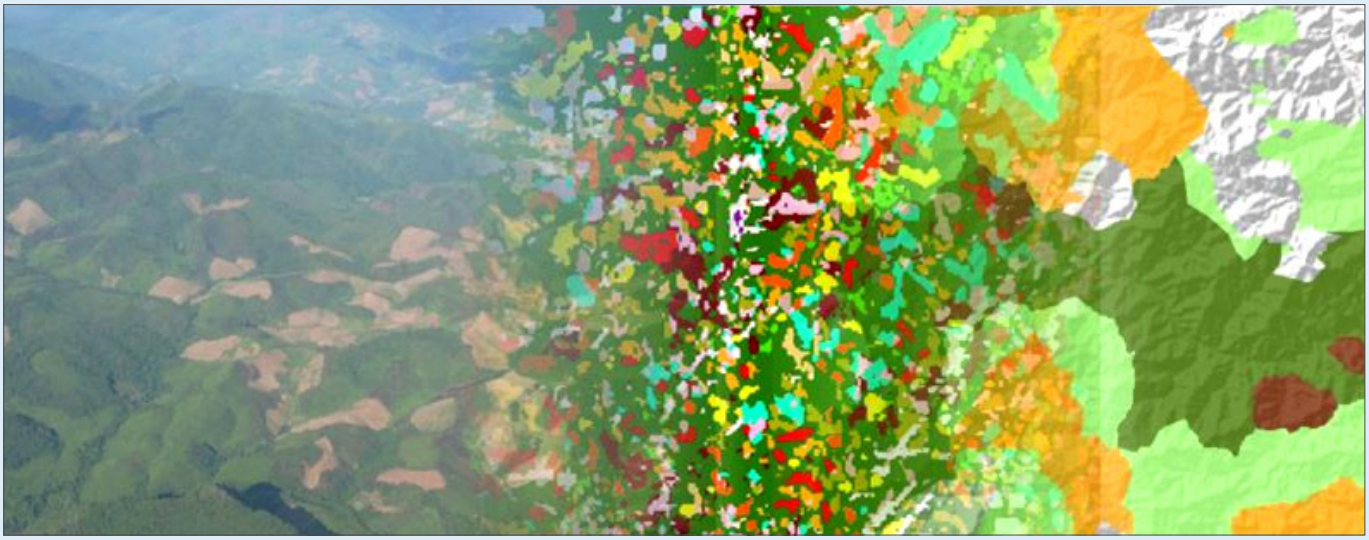
Resolving tensions between high-level goals of agricultural production, economic growth, environmental sustainability and equitable development is essential. Pursuant to this, the GoL (2018) adopted the *National Master Plan on Land Allocation* in 2018, identifying zones for development, production and protection. While the Master Plan provides an overall framework for state planning, it is insufficiently resolved at the local level to guide village development and conservation planning. Other challenges abound, including competing institutional mandates, the lack of cross-sectoral planning and clarification with regard to the local relevance and legal implications of the designation of state forest lands and other administrative categories.

Of particular concern is the management of upland agricultural systems that involve rotational cultivation. According to the last Agricultural Census, more than 240,000 households[4] engage in rotational shifting cultivation, involving around 212,000 ha of cropped area (Epprecht et al. 2018). Taken together with the fallows that are integral to this system, this may comprise as much as 6.5 million ha (Messerli et al. 2015), more than six times the total paddy rice production area of the country. Commonly, fallows are mis-identified as unused land (and thus available for concessions) or categorized as forest lands rather than as an agricultural land use (and thus often protected from clearance for rotational cultivation) through macroscalar planning and zonation approaches that do not involve adequate local participation.

Improved approaches are thus necessary to navigate competing policy objectives and achieve locally-acceptable outcomes in practice. This includes bottom-up participatory planning processes that reflect and ensure the needs of local communities and their natural environment and foster the enabling conditions for local planning and management. A key concern is the need to recognize the diverse uses and functions of land and forests. While state planners often prefer simplified zonation, such simplifications belie the complex, multifunctional services and local uses of rural landscapes. This brief assesses the potential of a bottom-up, multifunctional landscape-based approach: the participatory Forest and Agricultural Land Use Planning and Management (pFALUPAM). More specifically, this brief focuses on the ways in which this approach enables local socioeconomic development alongside forest resource conservation, a key high-level government objective and a proxy for environmental sustainability[5].

By identifying and explicitly mapping the actual uses of land and forest resources by local communities[6], pFALUPAM allows for local-level decision-making while at the same time bolstering local tenure claims by documenting these in sufficient detail to enable recognition and protection. By addressing the ways in which communities use and rely on resources distributed across the multifunctional landscape, and using these as a basis for agrobiodiversity-based livelihood development, pFALUPAM seeks to create synergies for the achievement of both development and conservation (Heinimann et al. 2017). To the degree to which pFALUPAM has been able to do this in practice, it represents a practical step forward toward simultaneously supporting local livelihood needs and aspirations while contributing to national policy directives and sustainable development goals.

[2] Roughly equivalent to total rice paddy area in Lao PDR (Epprecht et al. 2018)
[3] Including land under smallholders and land incorporated into concession projects
[4] Thirty percent of all households in Lao PDR, or roughly 2 million individuals
[5] Lao PDR's nationally determined contribution to SDG-15
[6] Versus zonation according to pre-determined administrative categories



Conceptual Principles for Participatory Land Use Planning for Conservation and Development

The pFALUPAM approach has built upon a long tradition of land use planning approaches in Lao PDR, benefiting both from their experiences and from important critiques of these approaches with regard to their level of local participation, suitability for planning, and effectiveness in practice. The pFALUPAM approach is founded on several key principles consistent with current best-practice:

People matter: Land use planning should be people-centred and primarily accountable to local resource users. While land use planning represents a negotiated agreement between local users and concerned government agencies (Dwyer and Dejvongsa 2017), it is not primarily about enforcement but rather about supporting local social and environmental needs. Norms of respect for local interests, needs and knowledge form the basis of effective communication, robust planning, and productive co-learning throughout the land use planning process.

Current land use matters: Planning processes should be based on actual land uses and reflect local knowledge and resource claims to elaborate specific, locally-desired outcomes. Standard land and forest categories developed at the national level are often ill-suited to local needs and fail to adequately reflect on-the-ground realities. The multiple functions of land and forest uses should be explicitly recognized and incorporated into planning. Land use classes should be flexible and adaptable to local context, but also be compatible with standard land classes to allow aggregation and comparability across administrative levels. Through its application in practice, the pFALUPAM approach has elaborated 49 different land use categories, comprising of more than 200 sub-categories, all of which aggregate up into the standard 8 land types utilized by state planners (such as Current Forest, Agricultural Land, Building Land, etc.). Hierarchically-nested categorization allows cross-walking with national planning frameworks.

Scale and vertical integration of planning matters: The scale of planning is an important factor determining its effectiveness in practice. **Land use planning should be developed in parallel between neighbouring villages, and aggregated to higher levels of spatial organization**, at least to the kumban level. Implementation at the landscape scale allows local planners to leverage synergies through the collaborative management of shared resources across village and other administrative boundaries, and to address and prevent inter-village conflicts.

A circular planning process matters: Land use planning processes should be iterative and developed over a period sufficient to allow local communities time for discussion, reflection and revision. Time is needed for co-learning and co-development of land use plans. The classification of land types and allocation of management zones often has important implications that are not immediately apparent to local users. Community members need time for internal discussions and negotiations. Rushing the planning process undermines the full participation and ownership of local communities and risks producing inoperable plans. pFALUPAM is elaborated through a multi-step process carried out over two or more years, depending on context.

Monitoring and evaluation matter: The effectiveness and practicability of land use plans are not always immediately apparent, and new issues may emerge once communities have begun to implement these. Thus, **monitoring of land use plans should be carried out over a period of time sufficient to allow for revision based upon actual experience**. This is foundational to adaptive management, and reinforces community institution building and the development of capacities for future adaptation of plans by community leaders. The pFALUPAM approach requires 1-3 years monitoring period, providing an opportunity for communities to assess the effectiveness of plans and make appropriate revisions prior to finalization.

Context-knowledge matter: Particular care should be taken with regard to the handling of rotational shifting cultivation fallows and forests, as the distinction between these overlapping land uses are often unclear to outside experts, requiring identification and demarcation together with local users. Remotely-sensed data and imagery are typically inadequate to make this distinction, resulting in negative social outcomes for local communities where fallows are mis-identified as forests, prompting the enforcement of forest conservation regulations without local consent or sufficient buy-in.

Embedding land use planning in strategic planning matters: Land use planning should be complemented by livelihood investments that build upon local resources, uses and potentials. Land use planning should be complemented by development interventions that build on local potentials and resources. The planning process itself provides an opportunity not only for collectively identifying current uses and resources, and how these are distributed throughout village areas, but also a mechanism for collaboratively elaborating a local vision for future development and management. As such, these plans serve not only as a basis for resource management but also a platform on which to construct potential development interventions that are consistent with local aspirations.

From Principles to Practice: *Negotiating Conservation and Livelihood Outcomes in the Multifunctional Landscape through pFALUPAM*

However necessary a foundation for achieving multiple outcomes in rural areas, the applicability of planning approaches depend on the effectiveness of their implementation in practice. The Ministry of Agriculture and Forestry (MAF) in cooperation with other concerned agencies, with support from the TABI project, NIRAS and the Centre for Development and Environment (CDE), has implemented pFALUPAM in nearly 300 villages across ten provinces in Lao PDR (Figure 1), covering nearly 1 million hectares of land (Table 1) with a primary focus on upland, northern areas where forest conservation needs are highest and where rotational shifting cultivation is a predominant land use.

The pFALUPAM process involves three separate planning missions, followed by a period of monitoring, prior to finalization with village and district authorities. (1) The first stage of pFALUPAM consists of initial consultations with authorities in each contiguous village within the village cluster (or *kumban*, the intermediate administrative level between the village and district), to introduce the approach, gain initial consent and determine and agree upon village boundaries. (2) The second round involves detailed assessment of current land uses within each respective village, livelihood activities and resources, and the mapping of these to produce the current land use map (Current Land Use and Forest Cover, or CLUFC). (3) The third stage is carried out after the village has had time to consider and deliberate the CLUFC and discuss possible future plans for resource use zones. This stage produces the land use plan (Forests and Land Use Management Zones, or FLUMZ). (4) the fourth stage involves participatory monitoring, supported by analysis of remotely-sensed data, to assess the practicability of the plan, degrees of conformance (below) and to work together with communities to revise the final land use plan. This final plan is then signed off by the District Governor's office.

The sections below detail some of the outcomes of this application in practice with respect to environmental sustainability, forest conservation, and rural development objectives.

Figure 1: pFALUPAM Implementation across Lao PDR

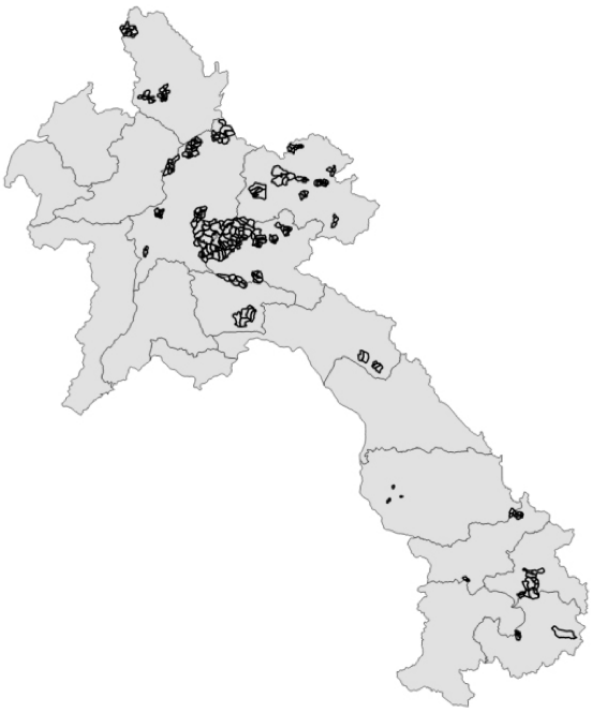
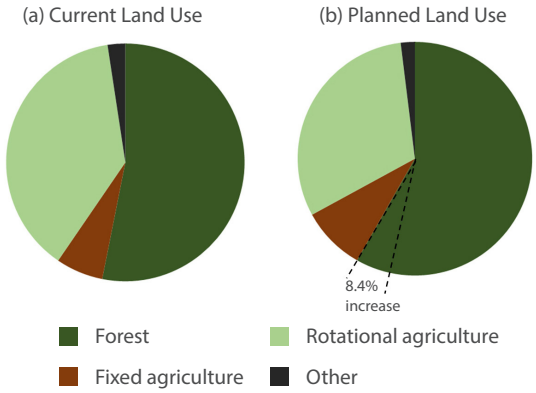


Table 1: Land use in pFALUPAM villages

Land use or land cover type	Current Land Use (ha)	Planned Land Use (ha)
Forest	471,610	511,433
Fixed agriculture land	57,667	88,952
Rotational agriculture land	332,889	260,653
Other	21,300	22,428
Total	**883,466**	**883,466**

Figure 2: Current and Planned Land Use in pFALUPAM villages



Changes between current land uses (the CLUFC) and planned land uses (the FLUMZ) vary significantly, depending on local contextual factors, and community needs and interests (Figure 3). Across all TABI-supported villages, areas allocated for forest increased by 8.4 percent (approximately 40,000 hectares) from current land use figures, though in some districts this was higher (for example Chomphet District, where areas designated for forests increased by more than 15 percent). It is important, however, to note that forest area figures here refer to those areas allocated for stable forest cover but do not include large areas of old fallow, which nevertheless exhibit a number of important forest functions and often meet the national forest definition[7]. Current and planned forest areas are distinguished on the basis of local uses, variously sub-classified as (for example) tea forests, forested livestock areas, or other locally-designated purposes, allowing local communities to continue to derive livelihood benefits while also supporting forest conservation goals.

In some areas, pressures on land have made the allocation of new forest areas impractical while, in others, allocation of agricultural land increased at the expense of forests in response to local needs (Figure 3). At the local level, changes between rotational cultivation and fallow areas, forests and fixed agriculture vary with specific local factors, such as land availability, the presence of viable and locally-desirable alternatives to rotational shifting cultivation, intact forest areas and community-identified protection zones along riparian areas, steep slopes and others (Figure 4). This suggests that ambitious targets for forest restoration may be suitable in some areas (such as where land availability is high or alternatives exist) but not in other areas.

[7] Lao PDR's national forest definition includes areas more than 0.5 ha, tree height of 5 m or more, 10 cm DBH, and canopy closure of 20 percent or more. (DoF 2018)

Figure 3: Change in Land Use in Selected Districts

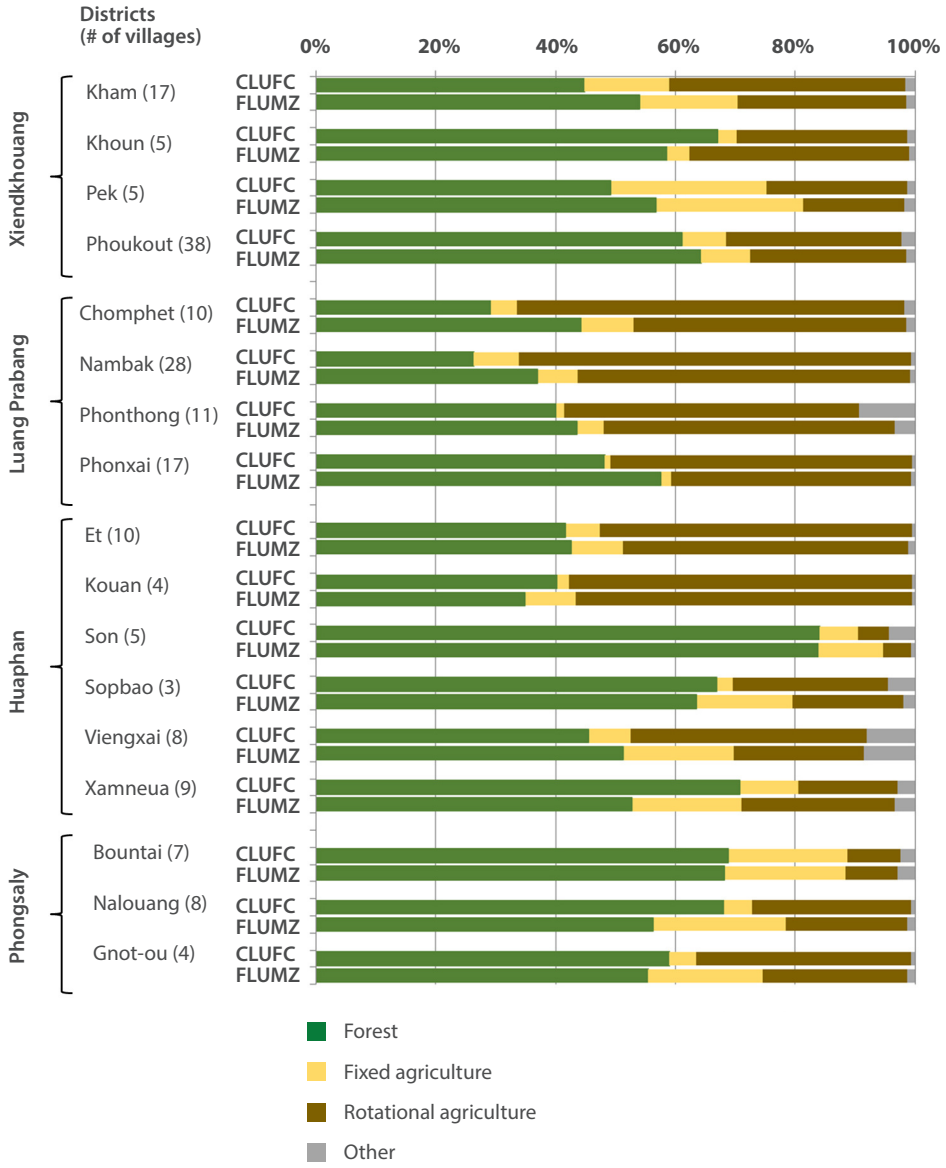
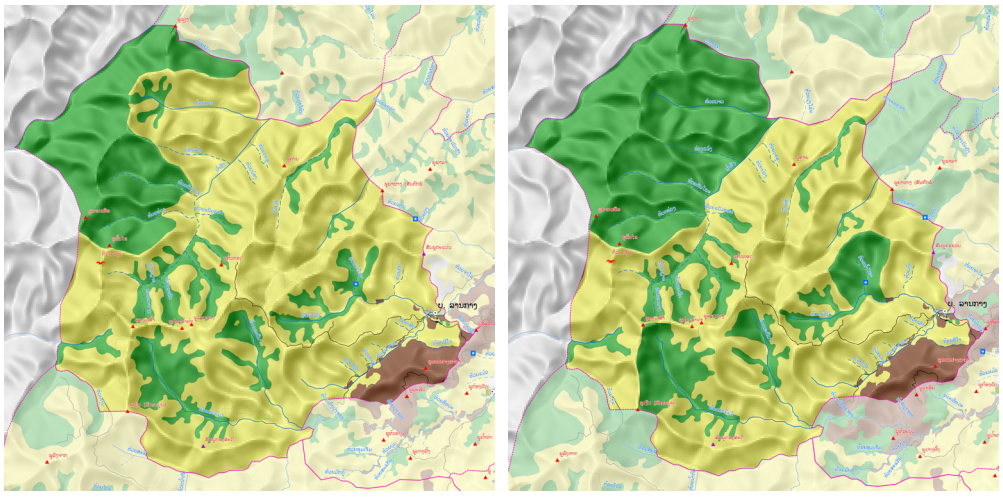


Figure 4: Land Use Change in Lankang village, Nambak District, Luang Prabang



	Fixed agriculture	Upland rotational agriculture	Forest	Other
Current land use	114 ha	2,334 ha	1,007 ha	2 ha
Planned land use	114 ha	1,929 ha	1,412 ha	2 ha
Change	*nc*	-405 ha	+405 ha	*nc*

Monitoring of FLUMZ for Local Adaptive Management

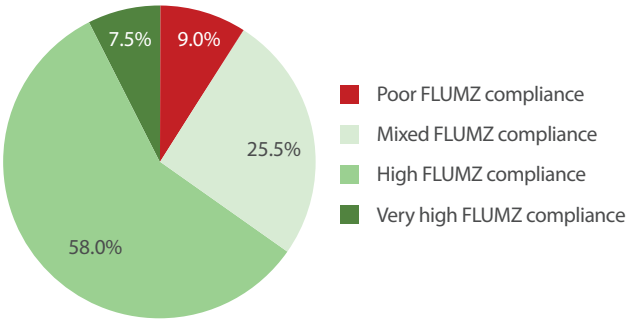
In order to assess the effectiveness and acceptability of the plan (FLUMZ), monitoring was carried out over a period of two to three years, through village and district reporting systems and verification by high-resolution satellite imagery. A subset of 200 villages was selected where rotational agriculture constituted an important land use. Visual examination of satellite imagery against FLUMZ was used to assess spatial patterns of rotational upland agriculture and whether these conformed with planned rotational co-location, and whether areas designated for forest conservation or natural forest regeneration were protected in practice. The outcomes of assessment and monitoring were fed back to village authorities and used to evaluate and revise the FLUMZ prior to sign off on the final plan by District authorities. Reasons for non-conformance were also discussed and used to inform a re-evaluation of the FALUPAM approach. Villages were classified by degree of conformance with the FLUMZ (Table 2).

Table 2: Compliance categories for FLUMZ monitoring

Class name	Class description
Very high FLUMZ compliance	Compliance with FLUMZ very high. The village community is performing rotational cropping under co-location, the zones for co-location match with the plan and no intrusion into forest was found.
High FLUMZ compliance	Compliance with FLUMZ high. The village follows the plan and incorporates co-location but there are some fields distributed outside the co-location areas and/or located in forest areas
Mixed FLUMZ compliance	Compliance with FLUMZ partially achieved. The village community largely changed from scattered rotational cultivation to co-location, however major differences between the FLUMZ and the current land use (pattern and extent) exist, and forest boundaries are in parts not respected.
Poor FLUMZ compliance	Compliance of FLUMZ is insufficient. The village community was not able to adopt the zoning elaborated through the FLUMZ process.

Monitoring data and expert assessment indicates that the majority of villages where pFALUPAM was conducted implemented the FLUMZ plan well (7.5% achieved very high, another 58% high marks). Still, nearly one quarter of all evaluated villages were able to convert their spatial pattern of farming into a co-locational form and to respect forest boundaries only partially[8], and 9% (18 villages) largely failed to comply with the FLUMZ plan (Figure 5).

Figure 5: Conformance monitoring of selected villages (n=200)



Mechanisms through which Forest Resource Conservation is Achieved

Participatory land use planning contributes to forest protection and the enhancement of forest stocks through several mechanisms, including the identification and conservation of existing forest areas and areas where communities choose to allow natural regeneration of forests, demarcation and protection of riparian forest buffers, and the co-location of rotational shifting cultivation to reduce fire pressures and enhance early successional forest through long-fallowing.

Identification of forests and potential forest regrowth areas

Remotely-sensed imagery is generally insufficient to reliably differentiate mature forests from fallows and other forms of secondary vegetation. Thus, in order to conserve existing forest areas, land use planning involved the participatory identification of current forests by local communities, differentiating these from swidden fields and their associated fallows. To prevent encroachment and ensure the integrity of existing mature forest areas, these are automatically incorporated into the FLUMZ.

Conservation and allocation of riparian forest buffers

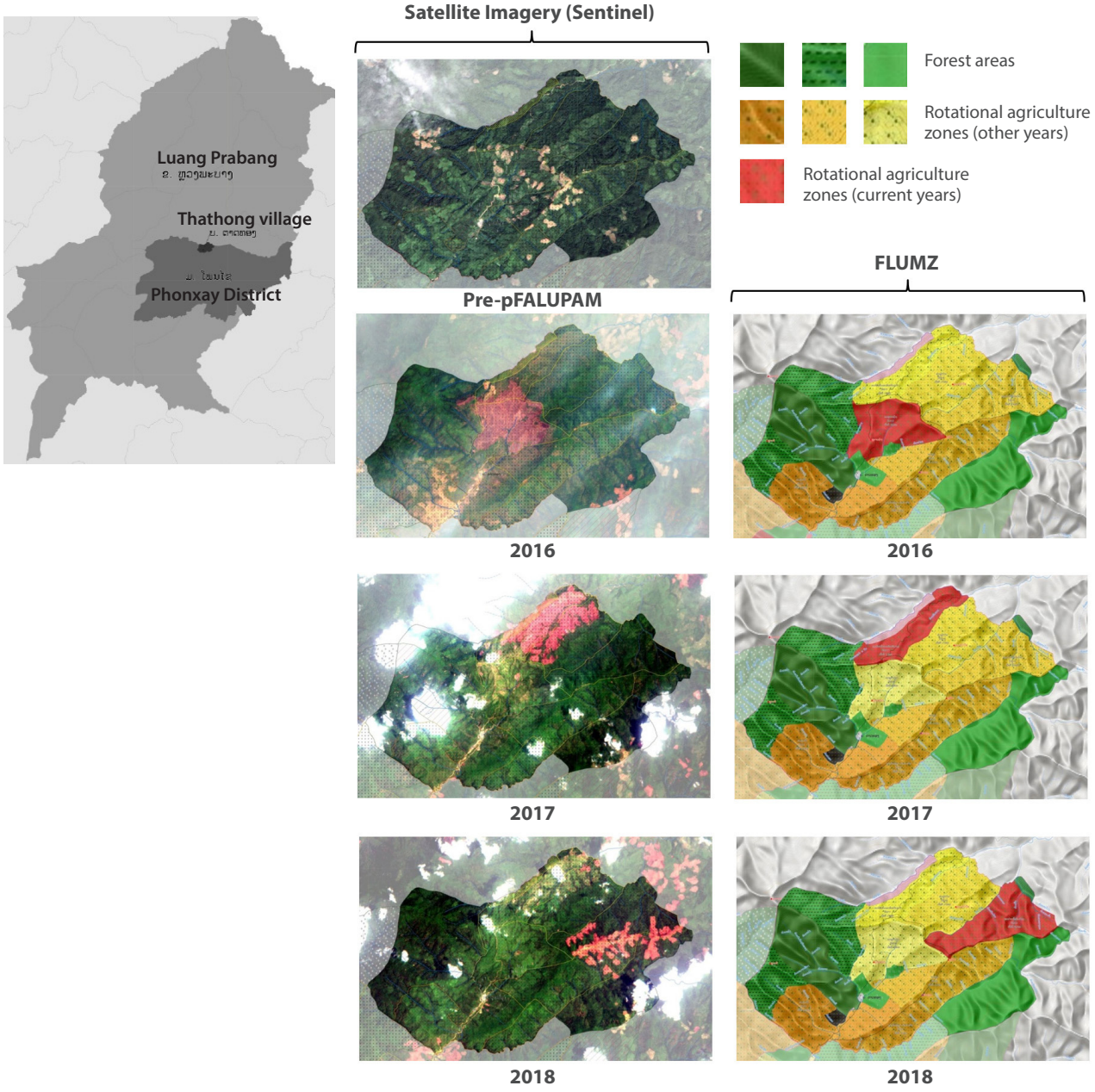
Riparian forest buffers represent one of the simplest, most effective ways to ensure water quality and the sustainable provision of hydrological services. Buffers protect streams and other watercourses by mitigating bank erosion, cooling surface waters, providing habitat and spawning sites for aquatic organisms, and filtering eroded soils and pollutants from agricultural runoff. Forested buffers also function as migration corridors for riparian and terrestrial species. Through pFALUPAM, buffer areas are identified and included in land use plans to ensure that they are protected or, where buffers have been degraded, enabled to naturally regenerate.

Supporting long-fallow rotational systems through co-location

Rotational agriculture fallows are a dominant land use in Lao PDR, providing a number of key ecosystem services including supporting wild biodiversity (Rerkasem et al. 2009; Mertz et al. 2009) and agrobiodiversity (Foppes and Ketphanh 2004, Xu et al. 2009), climate regulation and carbon sequestration (Hett et al. 2012, Fox et al. 2014), water regulation, and other ecosystem service values (Mertz et al. 2009, Van Vliet et al. 2012, Ingalls and Dwyer 2016). These ecosystem services (as well as livelihood benefits, see below) have a generally positive correlation with the length of the fallow period (Mertz et al. 2002, Fujita and Phanvilay 2008). In order to maximize these potentials and to minimize landscape fragmentation, pFALUPAM seeks to facilitate long-fallowing in rotational agriculture systems, through collaboratively planning for the inter-annual co-location of upland, rotational agricultural zones as an alternative to the unmanaged scattering of individual plots (Figure 6). The co-location of rotational shifting cultivation fields also reduces the risks and impacts of uncontrolled forest fires and thus protects forest resources from unintentional loss. These benefits are further supported by the creation of fire-breaks surrounding collective rotational shifting cultivation zones. Where rotational shifting cultivation fields are dispersed across the landscape, the creation of fire-breaks by individual households is often unrealistic, given labor constraints. Under existing pFALUPAM plans, fallow lengths average 6.3 years, with a range (depending on local land availability and other conditions) from 4 to 10 years. It bears noting that the co-location of rotational agricultural systems is an innovation based on traditional agricultural systems as practiced in some areas of Lao PDR, currently being expanded on a pilot basis through this approach[9].

[8] Often due to interruptions caused by individual land claims within traditionally- communal areas, or jap jong ti din (see below)
[9] See the final section that includes some cautions on its applicability in other areas

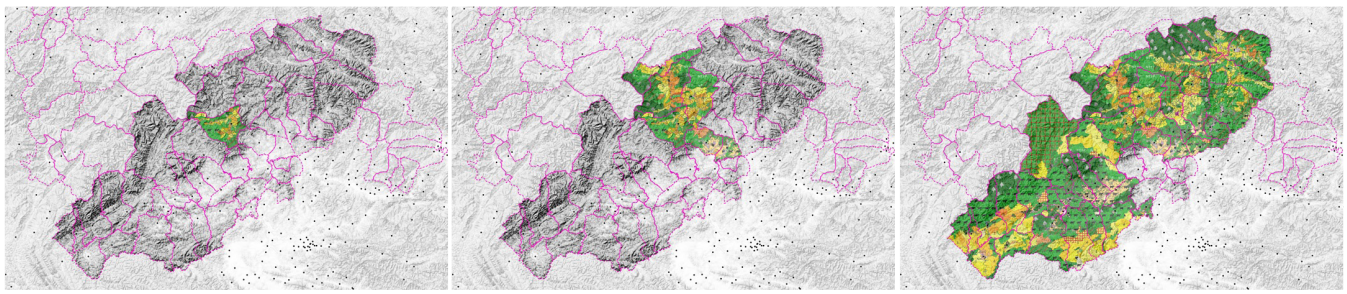
Figure 6: Co-Location of Rotational Shifting Cultivation, Thathong village, Phonxay District, Luang Prabang



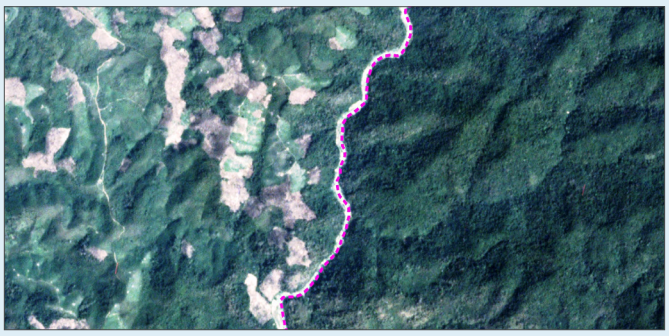
Landscape Integrity, Connectivity and Disturbance

It is not only the area of forest and its quality that are relevant for ensuring key ecosystem service values. Connectivity and disturbance patterns across landscapes also play an important role. Forest areas that span across village boundaries require deliberative planning at higher spatial scales to ensure collaborative management. Through the application of pFALUPAM at kumban and even district scales (Figure 7), inter-village connectivity of key ecosystem types and their associated functions are addressed.

Figure 7: Landscape-level Land Use Planning, Phoukhout District



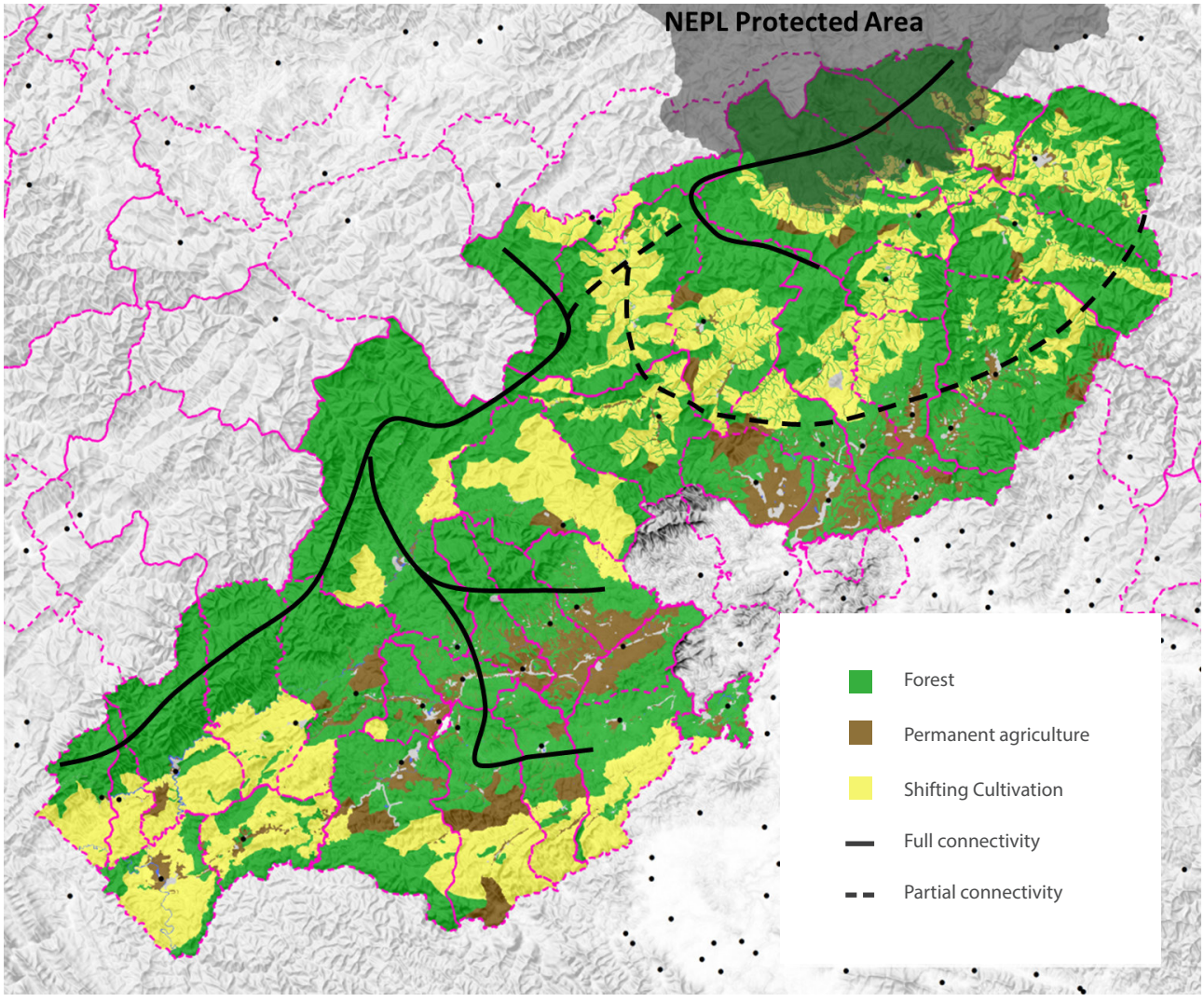
Planning at the landscape scale allows for the identification of connectivity corridors and movement pathways for species, supporting the conservation of large-mammals and other species (Figure 8). Landscape-scale connectivity also supports ecosystem service functions by linking ecosystems across boundaries, creating opportunities for synergies. This is especially critical for the protection of water provisioning services at the catchment- or watershed-level.



Planning at the landscape scale allows for multi-level co-management of resources that span administrative boundaries and provides an effective platform for negotiating potential resource-based conflicts surrounding these.

Caption: Forest break along village boundary in Phoukhout District prior to planning

Figure 8: Forest Connectivity at the Landscape-scale Phoukhout District



Local Livelihoods and Sustainable Development

While local communities derive important benefits from conserving and enhancing forest cover, there are also a number of important trade-offs, particularly for rotational shifting cultivators for whom setting aside forest restoration areas typically entails important opportunity costs. It is necessary to ask, then, where such opportunity costs incur, why would local agricultural households engage in and support this process? Consultation with local communities and assessment of the outcomes of participatory land use planning indicates several additional benefits for local communities. Some of these benefits are described below.

Livelihood benefits of co-located, long-rotational fallow

The length of fallowing periods in rotational agriculture systems is a direct determinant of crop productivity during the cultivation phase (Fujita and Phanvilay 2008, but see Mertz 2002). Long-fallows show enhanced soil fertility and lower weed pressures, reducing the need for agricultural inputs such as herbicides, with important implications for ecosystem health and human well-being.

In addition to the crops[10] produced during the cultivation stage, the livelihood value of rotational agricultural systems relies in large part on other products managed and collected from the fallows. Analysis of non-timber forest products (NTFPs) collected from villages that have carried out pFALUPAM indicates that local communities use, consume and sell more than 600 species from these fallows. NTFPs collected from rotational agricultural areas, including both cropped stages and fallows, comprise nearly half (48 percent) of the value of all marketed NTFPs, compared to only 10 percent from forest areas (Ingalls and Roth 2018).

In addition to positive social and environmental benefits enhanced by the co-location of rotational shifting cultivation with regard to labor-sharing and social interaction in adjoining fields, local communities also indicate an additional, unforeseen benefit in that communal rotation of fields allowed for collaborative management of livestock within young fallows. According to the village authority in Phonexay Village, Huaphan Province, "we really liked the idea of cultivating together. In the past, we each had our own fields in different areas, and seldom saw one another during the rice season. We also found that it provided an opportunity for the young people and women who tended the livestock after the harvest to tend the cows together in the fallow."

Tenure security and conflict management

Clear identification and demarcation of actual land uses through land use planning enhances local tenure claims. While the legal status of land use plans with regard to tenure security are unclear (see below), each is signed off by the Office of the District Governor, signifying official recognition of land use claims. This may be particularly important with respect to potential conflict with concession-based development planning, as expropriation and impact-assessment processes are more strongly influenced by officially-documented claims. In Mien Village in Huaphan Province, villagers indicated their confidence in the effectiveness of these plans: "if a developer came to the village and said they had been given permission to seek a land concession, we wouldn't approve it if it conflicted with the land use plan we have all agreed on together." Further, in areas where land titling has not been carried out, land use planning serves as the necessary first step toward systematic registration of land and the titling of individual parcels.

Threats to tenure security derive not only from outside interests related to land-based investments and development, but also from potential conflicts and encroachment from neighboring communities. In Na Mouane village in Huaphan Province, village authorities highlighted the insufficiency of historic land allocation activities that failed to clearly demarcate village boundaries. "In the past, we only had a basic map that showed us what the village area looked like and where the forest was. It was never clear on the ground where the actual boundary was. This created many problems for us, especially when it came to forests shared between our village and the next village. The new land use plans were made together with our village and theirs, so the boundary was clear and everyone agreed."

Village management

Clear and sufficiently detailed plans that have the buy-in of the community support village management by making use and conservation zones clear, supported by village by-laws and regulations. In Mien, the village authority explained "when we have to discuss together about the use of certain areas, and rules about these, we have a basis for this. We can bring out the maps and say, 'look, here is where we said we would have this forest, or that field, and then there is no dispute. In the past, I could just say do this or don't do that, but I didn't have any basis for reference."

Land use planning as the basis for livelihood development

By identifying actual land and forest resources and their associated uses, land use plans provide a platform on which to build livelihood activities. Efforts to support local livelihoods can be developed based on the existing resources and local uses of the community as identified in the plan, rather than creating something new and potentially incompatible with local contextual factors. The plans also provide an opportunity for the community to explicit weigh possible livelihood directions and consider potential conflicts between uses and development options. By leveraging resources identified during the planning process, local communities increased local revenue generation—through such activities as (for example) bee raising, riverweed processing, agroforestry for commercial NTFP production, local oranges, forest tea and broomgrass—by around USD 840,000 per year in only three provinces.

[10] Commonly rice, but also maize, vegetables and other crops

Not Always Perfect: *Some Gaps and Directions for Improvement*

The sections above cover the principles of participatory land use planning for sustainable livelihoods and forest conservation, and detail some of the ways in which these have been achieved in practice. Land use planning is complicated and influenced by a number of factors including local social relations, the capacity of staff supporting land use planning processes, and other contextual factors. Land use planning efforts thus have varying outcomes. Below, we explore key issues and areas where improvements are being explored to enhance the effectiveness of land use planning. Adequately identifying and engaging with these insufficiencies are necessary for effective planning into the future to secure forest conservation and sustainable development in multifunctional landscapes.

There remains a lack of vertical integration of spatial planning efforts conducted at various levels. Land zonation and spatially-explicit planning is being carried out at multiple levels in Lao PDR, with varying degrees of participation at each administrative level. Coherence between these efforts is an important policy objective for the Government of Lao PDR, and essential to effective planning for forest conservation and sustainable development. **Local land use planning efforts may be constrained by overly-restrictive land and forest categories.** High-level objectives for national forest-cover targets, for example, need to be carefully considered and weighed against local livelihood needs and customary uses. In addition to placing higher priority on local planning processes, this also suggests the need for a better national geographical data and information system that is able to integrate multiscalar planning systems and outputs.

Co-location of rotational shifting cultivation works very well in some places, but not everywhere. In some areas, villages have traditionally co-located their rotational shifting cultivation according to local customs while in others, villages have successfully piloted co-location and found it beneficial (as above). However, in areas where land use pressures are high, or where local customary practices are not suited to co-location, it has been less successful. Commonly, difficulties in the co-location of rotational shifting cultivation have been attributed to ethnic diversity at the village level. In practice, this is not typically the case. Multi-ethnic villages have in many cases successfully co-located fields (sometimes in separate, ethnic-specific zones), while mono-ethnic communities have sometimes struggled to implement co-location.

A central problem has been the **rise of individual land claims within communal areas, or *jap jong ti din*.** Where these land claims lie within areas planned for co-location of rotational shifting cultivation, conflicts arise. There is no systematic data available on the scope and scale of *jap jong ti din*, but evidence suggests that this is a substantial and growing phenomenon. Often, the process of *jap jong ti din* favors affluent and early-settler families who have the resources to create and defend land claims. This presents particular problems for planning in consolidated villages, where conflicts between communal and private land claims appear to be higher.

The legal status of land use plans for establishing and ensuring local land tenure claims remains unclear. While plans are approved and signed by the district authority and have been shown to offer some measure of protection, it has not been clarified whether these are sufficient in all cases to protect land claims, such as in the case of investment projects approved at higher levels of government. The legal status of approved land use plans vis-à-vis expropriation and other risks to tenure security is particularly urgent, given the very low degree of titling coverage for agricultural parcels[11]. Further, current interpretation of Lao PDR's legal framework suggests that individual titling may never be expanded in state forest areas, which cover more than 60 percent of the national territory, involving around 3,000 villages. While systematic land registration systems are being promoted, these will take time. In the interim, temporarily elevating approved land use plans to a level functionally equivalent to communal titles could be a practical approach.

Local institutional capacities for land use planning remain nascent. Land use planning is less about producing a product (the plan) than about fostering a process of collaborative decision-making and supporting the development of social institutions and local capacities for adaptive management. The pFALUPAM approach is implemented in close collaboration with local users and village administration, and supports an iterative process of planning, implementation, monitoring and revision. While necessary and a key improvement on historic land use planning approaches, it remains to be seen whether this is sufficient to enable local land use planning beyond project support. This is particularly significant given the rapid rate of market expansion, land-based investments and regional integration that will continue to drive large-scale land use change (Hett et al. 2020). Requiring investment companies to finance participatory land use planning in affected villages may be an appropriate option. In addition, the incorporation of participatory methods and land use planning approaches into curricula at tertiary academic institutions alongside capacity building at sub-national administrative levels (consistent with Lao PDR's decentralization policy[12]) will help to establish a broader human resource base to support future planning.

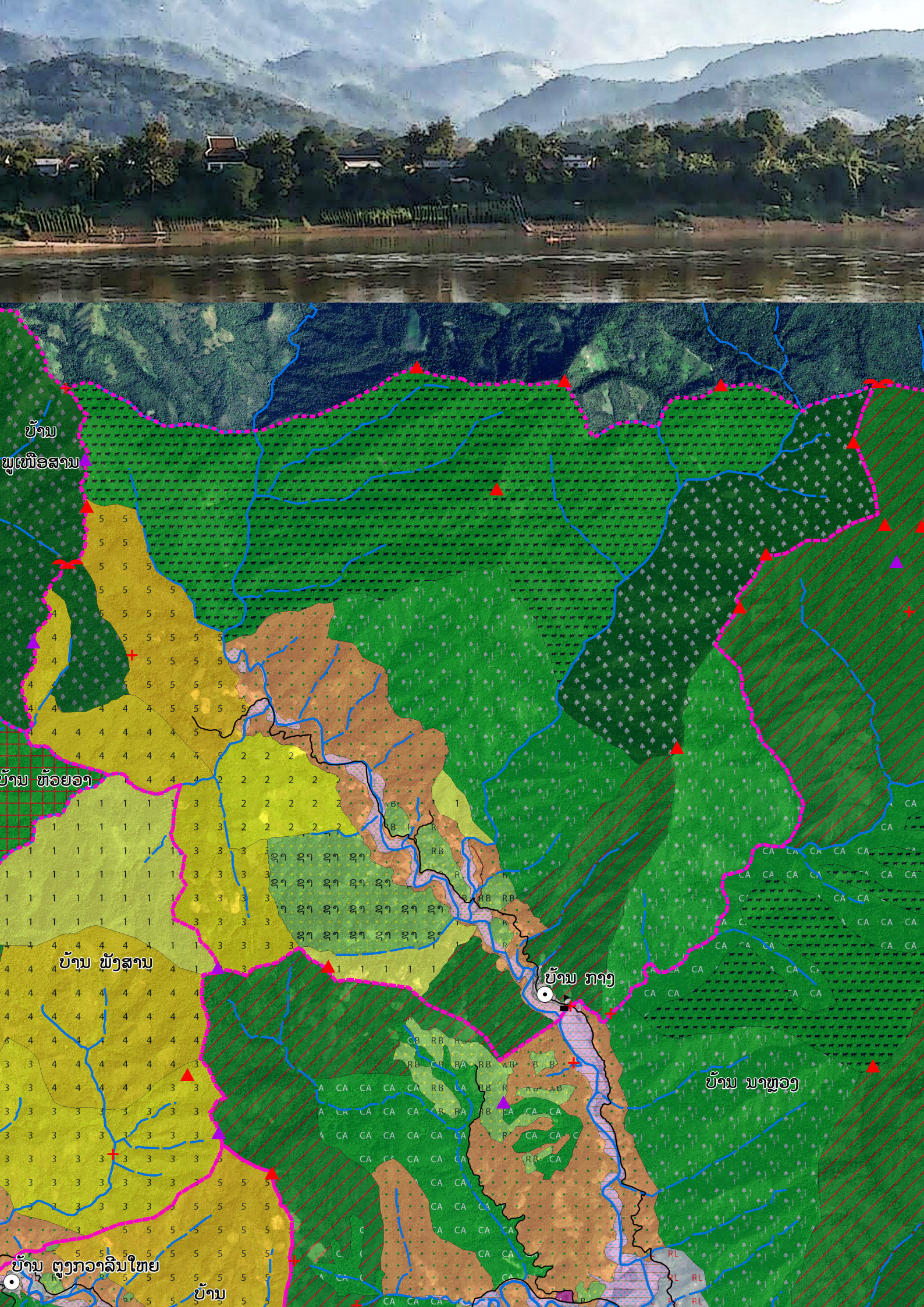
Local-level disputes cannot always be resolved through land use planning processes. Participatory land use planning is not a panacea for all land-related conflicts (Dwyer and Dejvongsa 2017). Collaborative planning between neighboring villages provides a platform for explicitly addressing long-standing disputes, but may not always be sufficient to resolve these (Suhardiman et al. 2019). Potential conflicts between land formally identified as communal but informally fragmented by individual land claims (*jap jong ti din*, above) also require further negotiation.

While participatory land use planning may enable effective and locally-agreeable solutions to negotiating local versus national priorities, the extent to which this is possible **depends to a large degree on the agency and individuals supporting land use planning**—the degree to which they value local interests, are willing to support effective and free participation, and the degree to which they balance local accountability with institutional priorities and higher-level policy directives.

Conclusion

The pace and scale of landscape transformation in Lao PDR—prompted by commercial investments, regional integration and national policies—call for urgent and innovative action to balance potentially competing goals toward more equitable socioeconomic development and environmental sustainability. While at the national level this has largely taken the form of land use master plans and broad zonation systems, these are insufficiently resolved at the local level to enable effective local participation or to ensure positive outcomes. There remains a tension between top-down and bottom-up planning processes. The practical application of the pFALUPAM approach, covering more than 1 million hectares across Lao PDR, suggests that disparate goals and potential conflicts between national and local interests may in large part be resolved through bottom-up planning processes. However imperfect, this provides an evidentiary basis for further discussion and consideration. The outcome of these discussions, and the degree to which potential trade-offs can be resolved, will be a decisive factor for whether Lao PDR can achieve long term sustainability and more equitable, socially-just development.

[11] Conservative estimates indicate that only 3 percent of agricultural parcels have been titled (Ingalls et al. 2018)
[12] Sam sang, or the 'Three Builds'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